

**Range**

Coast ranges of SE Alaska, the Cascades of Oregon and Washington, and California [\(6\)](#).  
In Canada, mostly in the South Yukon and the coast Range of British Columbia [\(4\)](#).  
Found towards the "east to central Idaho, Montana, and south to New Mexico and Arizona" [\(5\)](#).

Range photo courtesy of Michael Kuo at MushroomExpert.com: [http://www.mushroomexpert.com/subconifers/subconifers/abies\\_lasiocarpa.html](http://www.mushroomexpert.com/subconifers/subconifers/abies_lasiocarpa.html)

**Climate, Elevation**

Beginning at about 3500 ft until you reach treeline, where soon before treeline, its growth will be stunted. Will tolerate moist or dry sites. Shade tolerant, but grows in full sun [\(6\)](#).

**Local occurrence (where, how common)**

"Associated with glacial refugia on dry sites, especially limestone" north of the Olympics on the outer coast. Some small, isolated populations occur in dry sites in the eastern Olympics [\(6\)](#). Found on both slopes of the Cascades as far as southern Oregon [\(6\)](#).

**Habitat preferences**

Prefers cool, moist sites [\(7\)](#). Needs sun and well drained soil [\(4\)](#), but is known to be shade tolerant [\(6\)](#). Not exacting in its soil preferences [\(3\)](#). Found in floodplain valley-bottom forests and at higher elevations in such cold air drainages [\(6\)](#).

**Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)**

Stress tolerator, and in southeast Alaska, early post-glacial colonizer [\(6\)](#). Long-lived seral species in most habitat types [\(6\)](#).

**Associated species**

Engelmann spruces; lodgepole, whitebark, limber, or bristlecone pines; alpine larch; cork fir; aspen [\(2\)](#). White spruces; white spruce – paper birch; mountain hemlock; interior douglas fir; western larch; grand fir; western white pine; blue spruces; sitka spruces; western hemlock; coastal true fir; hemlock; alaska cedar; pacific silver fir; western red-cedar [\(3\)](#).

**May be collected as: (seed, layered, divisions, etc.)**

Seeds (cones) [\(4\)](#). Though the tree propagates itself through layering [\(6\)](#), it is not recommended to obtain cuttings [\(4\)](#).

**Collection restrictions or guidelines**

Collect early through mid September. Seed is fragile and can be easily damaged during de-wining [\(3\)](#).

**Seed germination (needs dormancy breaking?)**

30 to 60 day naked cold moist stratification (physiological dormancy) [\(5\)](#). Germination often poor [\(1\)](#). Collect lots of seeds.

**Seed life (can be stored, short shelf-life, long shelf-life)**

Seed longevity is up to 5 years in sealed containers [\(3\)](#).

**Recommended seed storage conditions**

Overwinter in outdoor nursery under insulating foam cover and snow [\(5\)](#).

**Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)**

Bare root, container, seed [\(6\)](#).

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**Soil or medium requirements (inoculum necessary?)**

No inoculum necessary, but may benefit growth [\(4\)](#). 70% 6:1:1 sphagnum peat, perlite, and vermiculite, and 30% sand [\(5\)](#). Grows well in clay soil [\(1\)](#). Minimum pH = 4, maximum pH = 6.50 [\(6\)](#).

**Installation form (form, potential for successful outcomes, cost)**

Container plants, grown from seeds, bare-root, seeds [\(6\)](#). If you don't have sufficient seeds, grow at least first winter in pots. "Plant in permanent positions in late spring or early summer, after last expected frosts" [\(1\)](#).

**Recommended planting density**

Minimum planting density: 300/acre; Maximum planting density: 1200/acre [\(6\)](#). (Equivalent to 1 tree per 37-146 ft<sup>2</sup>). "One report says that it is best to grow the seedlings on in the shade at a density of about 550 trees per square metre, [Equivalent to 51 plants per ft<sup>2</sup>] whilst another report says that they are best grown on in a sunny position" [\(1\)](#).

**Care requirements after installed (water weekly, water once etc.)**

Soil must be well-drained, do not over water [\(1\)](#). Medium moisture use [\(6\)](#).

**Normal rate of growth or spread; lifespan**

At timberline, reduced to shrub. Annual height growth for first 10-15 years at high elevations is commonly 2.5 cm. At lower elevations, 8.1-11.4 cm [\(3\)](#). Normal for trees to reach over 250 years old. Due to heartrot, however, many trees die early [\(6\)](#).

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**Sources cited**

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**Data compiled by (student name and date)**

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